CLAIMS

What is claimed is:

1. A user equipment (UE) having closed loop transmission power control for a wireless communication system in which user data is processed as a multirate signal having a rate N(t) where N(t) is a function time, in which the user data signal having rate N(t) is converted into a transmission data signal having a faster rate M(t) for transmission and in which the transmission power is adjusted by applying a scale factor in response to step up/down data, comprising:

a receiver which receives M(t) rate transmission data signals from a second station and generates the step up/down data for the second station including:

a data signal rate converter which decreases the data rate of received transmission data M(t) to produce a user data signal having a lower data rate N(t);

a data quality measuring device for measuring the quality of data of the user data signal;

circuitry for computing step up/down data based in part on the measured quality of data of the user data signal; and

said data signal rate converter associated with said circuitry to provide rate data such that said circuitry computes step up/down data as a function of N(t)/M(t) whereby a change in the user data signal rate N(t) or the rate M(t) of the transmission data signal is

compensated for in advance of a quality of data based adjustment associated with such data rate change.

2. The UE of claim 1 wherein the receiver further comprises:

an interference measuring device for measuring the power of an interference signal received with the M(t) rate transmission data signal;

said data quality measuring device outputting a nominal target SIR data based on relatively slowly collected received data quality data; and

said circuitry computing the step up/down data by combining measured interference power data of the signal received from the transmitter with target signal to interference ratio SIR data which is computed by multiplying the nominal target SIR data by a factor N(t)/M(t) so that the target SIR data is quickly adjusted when a change in data rate occurs.

3. The UE of claim 2 further comprising a transmitter having a data signal rate convertor which converts user data signal having rate N(t) into transmission data signals having a faster rate M(t) by repeating selected data bits whereby the energy per bit to noise spectrum density ratio is increased in transmission data signals which it transmits.

4. The UE of claim 3 further comprising a transmitter having a processor which computes a scale factor as a function of step up/down data received from the second station and N(t)/M(t).

5. The UE of claim 6 wherein the transmitter processor computes the scale factor based on step up/down data received from the second station and $\sqrt{}$(N(t)/M(t)).

6. The UE of claim 1 wherein the data signal rate converter decreases the data rate of received transmission data M(t) to produce a user data signal having a lower data rate N(t) by summing repeated data bits.

7. A method of using a User Equipment (UE) to control transmitter power in a wireless communication system in which user data is processed as a multirate signal having a rate N(t) where N(t) is a function of time, in which the user data signal having rate N(t) is converted into a transmission data signal having a faster rate M(t) for transmission to the UE for which power is controlled by a closed loop system where the transmission power is adjusted by applying a scale factor in response to step up/down data generated by the UE, the step up/down data being based in part on relatively slowly collected quality of data received by the UE, comprising:

determining step up/down data as a function of N(t)/M(t) such that a change in the user data signal rate or the data rate of the transmission data signal is compensated for in advance of a quality of data based adjustment associated with such a data rate change.

8. The method of claim 7 wherein the step up/down data is generated by the UE by combining measured interference power data of the received signal with target signal to interference ratio (SIR) data which is computed by multiplying nominal target SIR data, based on relatively slowly collected received signal quality data, by a factor N(t)/M(t) so that the target SIR data is quickly adjusted when a change in data rate occurs.

9. The method of claim 8 wherein the UE down converts the received signal having a faster rate M(t) to a data signal having rate N(t) by summing repeated data bits.

10. A base station having closed loop transmission power control for a wireless communication system in which user data is processed as a multirate signal having a rate N(t) where N(t) is a function time, in which the user data signal having rate N(t) is converted into a transmission data signal having a faster rate M(t) for transmission and in which the transmission power is adjusted by applying a scale factor in response to step up/down data, comprising:

a receiver which receives M(t) rate transmission data signals from a second station and generates the step up/down data for the second station including:

a data signal rate converter which decreases the data rate of received transmission data M(t) to produce a user data signal having a lower data rate N(t);

a data quality measuring device for measuring the quality of data of the user data signal;

circuitry for computing step up/down data based in part on the measured quality of data of the user data signal; and

said data signal rate converter associated with said circuitry to provide rate data such that said circuitry computes step up/down data as a function of N(t)/M(t) whereby a change in the user data signal rate N(t) or the rate M(t) of the transmission data signal is compensated for in advance of a quality of data based adjustment associated with such data rate change.

11. The base station of claim 10 wherein the receiver further comprises:

an interference measuring device for measuring the power of an interference signal received with the M(t) rate transmission data signal;

said data quality measuring device outputting a nominal target SIR data based on relatively slowly collected received data quality data; and

said circuitry computing the step up/down data by combining measured interference power data of the signal received from the transmitter with target signal to interference ratio SIR data which is computed by multiplying the nominal target SIR data by a factor N(t)/M(t) so that the target SIR data is quickly adjusted when a change in data rate occurs.

12. The base station of claim 11 further comprising a transmitter having a data signal rate convertor which converts user data signal having rate N(t) into transmission data signals having a faster rate M(t) by repeating selected data bits whereby the energy per bit to noise spectrum density ratio is increased in transmission data signals which it transmits.

13. The base station of claim 12 further comprising a transmitter having a processor which computes a scale factor as a function of step up/down data received from the second station and $N(t)/M(t)$.

14. The base station of claim 13 wherein the transmitter processor computes the scale factor based on step up/down data received from the second station and $\sqrt{(N(t)/M(t))}$.

15. The base station of claim 10 wherein the data signal rate converter decreases the data rate of received transmission data $M(t)$ to produce a user data signal having a lower data rate $N(t)$ by summing repeated data bits.

16. A method of using a base station to control transmitter power in a wireless communication system in which user data is processed as a multirate signal having a rate $N(t)$ where $N(t)$ is a function of time, in which the user data signal having rate $N(t)$ is converted into a transmission data signal having a faster rate $M(t)$ for transmission to the base station for which power is controlled by a closed loop system where the transmission power is adjusted by applying a scale factor in response to step up/down data generated by the base station, the step up/down data being based in part on relatively slowly collected quality of data received by the base station, comprising:

determining step up/down data as a function of N(t)/M(t) such that a change in the user data signal rate or the data rate of the transmission data signal is compensated for in advance of a quality of data based adjustment associated with such a data rate change.

17. The method of claim 16 wherein the step up/down data is generated by the base station by combining measured interference power data of the received signal with target signal to interference ratio (SIR) data which is computed by multiplying nominal target SIR data, based on relatively slowly collected received signal quality data, by a factor N(t)/M(t) so that the target SIR data is quickly adjusted when a change in data rate occurs.

18. The method of claim 17 wherein the base station down converts the received signal having a faster rate M(t) to a data signal having rate N(t) by summing repeated data bits.